U. S. Department of Energy

EML Environmental Measurements Laboratory

Programmatic Overview

National and International Agencies

EML's long-standing reputation for excellence in environmental measurements has led to its being called upon for assistance and consultation by numerous organizations in the U.S. and around the world. Currently, 18% of the Laboratory's efforts are directed toward fulfilling special needs within the scientific community outside of DOE that relate to the assessment of radiation and radioactivity in the environment. Projects of this nature are seen as a natural extension of the staff's collective expertise and are in keeping with a larger role that a specialized laboratory such as EML plays within the DOE family.

Descriptions

- EML is under contract to the U. S. Nuclear Regulatory Commission to develop new radiological survey designs and measurement methods for residual radioactivity that will be used to meet new decommissioning criteria that are being proposed under a rulemaking.
- The United States Air Force provides funding to EML for the development of monitoring instrumentation to support verification programs under the Comprehensive Test Ban Treaty.
- EML is working with the National Aeronautics and Space Administration to study the ionizing radiation components in the stratosphere to provide essential information on the radiation risks associated with high altitude flights that are planned with the next generation of supersonic commercial aircraft.
- The International Atomic Energy Agency relies on EML for expert laboratory analysis of samples, to serve in working groups for the assessment of radiological situations around the globe, and to perform direct field measurements in contaminated areas.
- EML is funded by the United States Air Force to study the fate of actinide-bearing particles associated with the nuclear fuel cycle to provide baseline information in support of nuclear non-proliferation issues.

Points of Contact

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Please visit our web site at: **http://www.eml.doe.gov** *for more information on our programs, facilities, capabilities and downloadable publications.*

Accomplishments

- As technical representatives for the NRC, EML has played a major role in the development of the Multi-Agency Radiological Site and Survey Investigation Manual (MARSSIM) which provides guidance for planning, conducting, evaluating and documenting radiological surveys for decontamination and decommissioning of nuclear facilities.
- The NRC has published two draft reports that were authored by EML: "A Non-Parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys" (NUREG-1505) and "Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria" (NUREG-1506).
- Demonstration final status surveys have been conducted by EML at four different facilities using the new measurement and statistical testing methodology developed in support of the NRC decommissioning rulemaking.
- EML served on an expert elicitation panel for the joint U.S. Nuclear Regulatory Commission/Commission of European Communities Consequence Uncertainty Project that dealt with deposited materials and related doses associated with accidental releases from commercial nuclear power stations.
- A fully automated aerosol sampling and measurement system, AUTORAMP, which incorporates a high volume pump, interchangeable filter cartridges, and a mechanically-cooled high resolution Ge detector for gamma spectrometry, was successfully tested at McClellan Air Force Base in California over a seven month period during 1996.
- EML has collected unique cosmic-ray data using an instrumentation package that includes a neutron spectrometer during several high altitude flights of NASA's ER-2 aircraft.
- At the request of the IAEA Seibersdorf Laboratory, EML analyzed 35 samples collected in the atolls of Mururoa and Fangataufa in French Polynesia for Pu-238, Pu-239/240, Am-241, and Sr-90. EML is also participating in Working Group 3 on Source Term Evaluation in the study of the radiological situation at these atolls.
- Two research papers, "An Assessment of Uranium in Surface Air Within the Continental US" and "Temporal Variation Analysis of Plutonium Baseline Concentration in Surface Air from Selected Sites in the Continental US", have been published in the Journal of Environmental Radioactivity.